

An Investigation on the Roles of Grammar and Vocabulary Knowledge in an Advanced L2 Reader's Reading Performance

Abstract

This case study is aimed at exploring the extent to which grammar and vocabulary knowledge affect an advanced L2 reader's reading process when the reader consumes materials in the contexts of reading articles from Time Magazine. It also explores how an advanced L2 reader tackles the difficulties she encounters during L2 reading activities. In this case study, the reading process of a native Chinese speaker who is currently a doctoral student majoring in TESOL in the northern part of Taiwan was investigated. Methods of data collection include personal interviews, recall protocols, and think-aloud protocols. The results of this study reveal that with a competent level of English grammar and vocabulary knowledge, the L2 reader could successfully complete the reading tasks without making major comprehension mistakes and was able to overcome reading challenges posed by difficult vocabulary and complex grammar structures. Research findings also reveal that the reader's reading comprehension was mainly facilitated by her competence of employing a variety of reading strategies which compensated the insufficiency of grammatical and lexical knowledge.

Key words: L2 reading, language proficiency, reading strategies

Introduction

The notion that second language proficiency plays a pivotal role in enabling readers to comprehend the texts written in L2 has been discussed and validated empirically by many L2 reading researchers (Bernhardt & Kamil, 1995; Carrell, 1991; Eskey, 1998; Lee & Schallert, 1997; Taillefer, 1995). According to this concept, L2 readers, in order to grasp the meanings in the texts, need to utilize their L2 ability not only to decode the words and analyze the semantic structures of the sentences but also to transfer their L1 reading ability and strategies in L2 reading contexts. Given the significant contribution made by L2 language proficiency to L2 readers' reading development, researchers have been interested in issues such as short-circuit hypothesis and threshold hypothesis, focusing on the interrelation between L2 readers' second language ability and their L2 reading performance for more than two decades. Alderson (1984), for example, by comparing the work of "short-circuit" hypothesis and that of "reading universals" hypothesis, raised a critical question that "whether L2 reading is more a reading or a language problem." Although Alderson's question has not been answered definitively by recent research, the question has motivated researchers to examine the impact second language readers' language proficiency has on their L2 reading performance.

To define general construct of language proficiency, language learners' grammatical knowledge and vocabulary ability are deemed two key components, which have widely considered to be decisive factors which influence L2 readers' reading performance (Alderson, 2000; Grabe, 2004; Qian, 1999, 2002). The interrelations between L2 readers' grammar and vocabulary ability and reading performance have been maintained by the findings of the research; however, given the fact that the research subjects included in those studies were mostly L2 learners with lower or intermediate levels of language proficiency, it is reasonable to speculate whether grammar and vocabulary have a similar impact on advanced L2 readers. Part of the answer of this question has actually been revealed by some of the studies since the results of the research show that the importance of grammar and vocabulary ability in L2 reading will decrease

when L2 readers' level of language proficiency is getting higher (Lee & Schallert, 1997; Schoonen, Hulstijn, & Bossers, 1998). Despite that a great deal of effort has been made to explore the relationships between L2 reading performance and L2 readers' language proficiency, few studies have gone a step further to explore how and to what extent grammar and vocabulary knowledge of advanced L2 readers functions in their reading process and to compare how advanced L2 readers' processing of written texts in L2 differs from that of readers with intermediate levels of L2 proficiency. Besides, from the perspective of research methodology, due to the fact that most of the studies were usually conducted by administering large-scale reading or language tests and analyzed with statistical instrument, it is difficult to obtain an in-depth picture of how L2 readers solve the difficulties caused by insufficient language proficiency in terms of grammar and vocabulary knowledge when they engage in reading tasks.

The Present Study

The purpose of the present case study is twofold. First, this case study is aimed at finding out if insufficient grammar and vocabulary knowledge hinders or causes troubles in an advanced L2 reader's reading process when the reader consumes materials with various topics, contexts, and language sophistication. Second, the present study intends to explore how an advanced L2 reader tackles the difficulties she encounters during L2 reading activities. Even though previous studies have shown that readers with higher level language proficiency can use their reading strategies or transfer L1 reading ability to facilitate reading in L2, there is still scarce information about how this process actually takes place. Given the nature of qualitative research, it is hoped that this case study would provide more details about the role of grammar and vocabulary knowledge in advanced readers' L2 reading. There are two research questions included in this case study:

1. How does an advanced L2 readers' grammatical and lexical knowledge affect his/her reading performance?
2. What are the reading strategies which an advanced L2 reader uses to overcome the reading difficulties and compensate the insufficiency of language ability?

Literature Review

That L2 readers' knowledge in vocabulary and grammar is vital in L2 reading comprehension and performance has long been accepted in the field of research even though researchers have well recognized the complex combination of skills required for efficient L2 reading. Based on the notion that rapid and accurate identification of lexical and grammatical forms are necessary means of reading comprehension (Eskey, 1998), many studies have inspected the relationship between L2 readers' vocabulary and grammar ability and their L2 reading comprehension and fluency. The study conducted by Hazenbarg and Hulstijn (1996) was to answer "the question of how many words a reader needs to know to read most texts fluently" (p. 134). Through testing Dutch-L2 students' vocabulary and L2 reading ability, they concluded that in order to read university-level texts successfully, Dutch-L2 readers would need to know at least 10,000 headwords. Their research shows that L2 reading requires a large acquisition and recognition of vocabulary in L2 and suggests that teachers or curriculum developers in university level need to pay attention to measuring L2 learners' vocabulary skills in terms of how many words can be learned by L2 students.

Schoonen, Hulstijn, and Bossers (1998) also investigated the issue of how L2 readers' vocabulary skills influence their reading performance. They administered tests to measure the

abilities of 685 students' reading comprehension and vocabulary in English as a foreign language in grades six, eight, and ten in the Netherlands. The results of their study suggested that vocabulary is a critical factor in accounting for reading abilities at all levels and in both L1 and L2 languages. They also found "evidence for the so-called threshold hypothesis, according to which (metacognitive) knowledge of reading strategies, reading goals and text characteristics cannot compensate for a lack of language-specific knowledge if the latter remains below a certain threshold level. The limited FL knowledge 'short-circuit' the transfer of reading skills to the FL" (p. 72). The findings of their study not only substantiated that readers' L2 vocabulary skills are closely related to how well they can read, but also suggested that reading instruction for students with lower language proficiency should put more focus on helping students acquire linguistic knowledge in terms of vocabulary accumulation. Similarly, the study conducted by Qian (2002) also confirmed the importance of vocabulary in L2 reading. In the study, he aimed to "determine the contribution of vocabulary size and some factors of vocabulary depth (synonymy, polysemy, and collocation) to basic reading comprehension" (p. 520). 217 undergraduate students enrolled in an intensive ESL program at the University of Toronto were tested on their vocabulary and reading comprehension in the context of TOEFL. The study found that "both vocabulary depth and vocabulary size are important factors of predicting performance on academic reading," and it also asserted "the importance of the vocabulary factor in reading assessment" (p. 514). Although the major implication of Qian's research is more constrained in the context of academic reading, the influence of readers' L2 vocabulary ability on their reading performance is verified and the relationship between these two variables is once again strengthened in another aspect.

With a broader view of language proficiency than only focusing on vocabulary, Lee and Schallert (1997) conducted a study to examine the relationship between L2 proficiency and reading by testing the threshold hypothesis in an EFL context. In their study, they specified the operational definition of language proficiency as "knowledge of vocabulary and of grammatical structures" after reviewing several testing instruments and measurement of language proficiency and generalized that "all the measures relied heavily on knowledge of vocabulary and of grammatical structures" (p. 717). 809 middle and high school Chinese students learning English as a foreign language were given three tests-- an English language proficiency test, an English reading comprehension test, and a Chinese reading comprehension test-- to test two hypotheses: (1) the relationship between L2 language proficiency and L2 reading will be stronger than the relationship between L1 reading ability and L2 reading, and (2) L2 proficiency has greater influence on reading performance of readers with lower language levels than of those with higher levels of language proficiency. Both of their hypotheses were substantiated. The results of the research indicate that "L2 proficiency plays a more critical role in reading in an L2 than does L1 reading ability" (p. 732) and that the correlation between L2 proficiency and L2 reading performance is much more significant for lower-level students than higher-level students. Accordingly, it can be confirmed that EFL students would need to acquire sufficient grammar and vocabulary skills in order to process and comprehend the texts in English accurately and fluently.

Recently, Farvardin and Koosha (2011) conducted a study aiming to investigate the relationship between vocabulary knowledge and reading comprehension, and to find out which aspect of vocabulary knowledge, breadth or depth, has greater impact on determining reading comprehension performance. In the study, 78 Iranian EFL university students were tested in reading comprehension and vocabulary. The results of the study showed that the students'

vocabulary knowledge correlated positively with their reading comprehension performance. They further suggested that vocabulary breadth appeared to be a stronger predictor of reading comprehension than depth of vocabulary knowledge and that both aspects play important roles in reading comprehension. With a similar research orientation, Schmitt, Jiang, and Grabe (2011) focused on the relationship between percentage of vocabulary known in a text and level of comprehension of the same text. To collect the data, there were 661 participants from 8 countries who completed a vocabulary test based on words drawn from two texts, read the texts, and then completed a reading comprehension test for each text. According to the research results, there was a relatively linear relationship between the percentage of vocabulary known and the degree of reading comprehension. Moreover, no indication of a vocabulary “threshold,” where comprehension increased dramatically at a particular percentage of vocabulary knowledge was found. Finally, the study indicated that the 98% estimate is a more reasonable coverage target for readers of academic texts.

For L2 readers, being equipped with grammar and vocabulary ability is not sufficient to comprehend reading materials effectively. As Grabe and Stoller (2002) noted that L2 readers need to be “strategic” (p. 18), the issues of L2 reading strategies have also been another focus of investigation in addition to the research on the links between L2 readers’ grammar and vocabulary ability and reading performance. For instance, Anderson (1991) examined individual differences in strategy use by second language learners when engaged in two types of reading tasks. Findings of the study suggested that L2 readers used various types of reading strategies, but the key factor which distinguished poor and expert readers was how successfully they could apply the strategies. On the other hand, Anderson (1991) pointed out that the successfulness of utilizing the strategies might be determined by the L2 readers’ vocabulary and background knowledge. He said, “Beginning level language learners may know what strategies to use but because of a lack of vocabulary, or other schema related information, they may not have a strong enough language foundation to build on” (p. 469). With an interest in specific reading strategy, Kern (1994) explored L2 readers’ uses of mental translation as a reading strategy to facilitate comprehension. He found that the students in his study used translation to assist in semantic processing and consolidation of meaning with difficult text. Also, the students benefited from mental translation when they used the strategy to assure that they really understood the passage, to keep information active and to put ideas in a reasonable order.

Methodology

Participant

The participant of this case study is a doctoral student who enrolls in the program of foreign and second language education at one private university in northern Taiwan. Jenny is a native Chinese speaker and has learned English as a foreign language for almost twenty years since junior high school. Like most EFL students, she learned English through traditional teaching methods which emphasize much on grammar translation, grammar structures and vocabulary memorization, and reading activities. Learning English for Jenny was like studying other subjects such as math or history as a means to pass entrance exams and go to college. Jenny majored in English when she was a college student. She also got her Master’s degree in linguistics in Taiwan. After finishing the master’s program and teaching English for several years in Taiwan, Jenny decided to study abroad with a specialization in TESOL, so she entered a university in the United States to pursue another Master’s degree. Currently she is a third-year doctoral student at the program, and she had been in the United States for more than three years.

Although there was no test administered to measure Jenny's language proficiency in general, she is considered as an advanced English learner. It is because she has learned English for so many years, and she is more than capable of accomplishing all of the academic tasks in a prestigious university in the English-speaking country. Additionally, according to Jenny, she obtained a TOEFL score of 630 when she applied for the Master program.

Procedures

The data of this case study were gathered through several methods of qualitative and reading research. Three major methodologies-- personal interviews, recall protocol, and think-aloud protocol-- were used to collect research data to understand Jenny's reading practice in English in a multifaceted way. During the research, Jenny had six meetings with the researcher in a time span of three months. The first two meetings were used to gather Jenny's personal information, history of English learning, L1 and L2 reading styles, and relevant details regarding L2 reading. Subsequent to personal interviews, Jenny was asked to read an article in each of the following four meetings. After each reading activity followed by recall or think-aloud protocols, Jenny was asked several follow-up questions to give more details about how she processed the reading and what tactics she used to comprehend the English texts. All of the interviews and protocols during the six meetings were tape recorded as well as transcribed for further analysis. Details about each meeting and research procedure are described chronologically as follows to help better perceive Jenny's reading practice through the case study.

In the first meeting, the researcher had an interview with Jenny for the purpose of understanding her general reading ability in both Chinese and English, reading styles, and preferred genres. She talked about her different ways of reading depending on the materials and the purposes, and she was asked some questions about when and how she encountered difficulties of reading in both L1 and L2 as well as what kind of strategies she usually used to help herself get through the obstacles and continue the reading practice. In order to obtain more information about how Jenny read in English, second meeting was arranged to interview Jenny again by looking into Jenny's books and articles she read for school work or for entertainment in her free time. Also, she was asked questions related to the highlights, marks, circles, and Chinese or English notes on the margin of the pages that she put on the reading materials. For instance, the researcher asked Jenny to explain the meanings and functions of different symbols such as brackets, slashes, circles, as well as different colors of pens or crayons she drew to highlight the sentences or paragraphs.

The next four meetings, each with a different focus, were designed to explore how Jenny actually processed the texts written in English. During each meeting, Jenny was asked to read one article and record her recall protocols for the third and fourth meetings and think-aloud protocols for the fifth and sixth meetings after completing reading tasks. When reading, Jenny were free to use any equipments or strategies to facilitate reading comprehension and fluency such as looking up unknown words from dictionaries, writing notes on the margins of the articles, highlighting key sentences, or making any marks on the materials. There were no time limits for completion of each reading activity. She was allowed to read as many times as she needed until she felt confident to record her protocols and answer the follow-up questions. Upon finishing the readings and oral protocols, Jenny was asked several questions about the articles and the reading process such as: Is this article difficult or easy to you? Why? Where is the most difficult part of this article? Why? How do you help yourself better understand the article? Why did you underline/circle(or any actions of marking that may apply) the sentences? Usually each meeting

took around one and half hour to complete all of the activities, but after meetings, Jenny was available for further questions if the researcher needed further clarifications when transcribing the interviews and protocols.

Reading Materials

The articles chosen for Jenny to read were news/feature stories from Time Magazine. To avoid exhausting Jenny with lengthy readings, the researcher selected the stories of only one to two-page long (about 800 to 900 words each) with different topics and foci. Each of the articles contained photos and pictures accompanied with caption. The titles and topics of the articles were: *Great Leap Skyward* (China's space program), "*She Is Very Brave*" (Iranian lawyer wins Nobel Peace Prize), *How The Teachers Killed a Dream* (a plan for building a charter school in Detroit was nipped), and *Drano for The Heart* (an experimental drug as a new treatment for heart disease). The degree of difficulty of the articles can be roughly rated as medium or hard, with about 10 (for medium) to 15 (for hard) highly difficult words in each article (pre-tested by a graduate student whose 2011 GRE verbal score reached 630, or top 11% of all test takers). Although the four articles are at similar level of difficulties in terms of language sophistication, it is assumed that different topics and subject areas would produce variance of difficulties in comprehending the context.

Results and Discussions

Research Question 1

The first research question asked about how grammatical and lexical knowledge affects an advanced L2 reader's reading performance. Results of the study suggested that, Jenny, an advanced reader with competent grammar and vocabulary ability, could read fluently and efficiently despite the fact that she might need to overcome some challenges posed by difficult words and complex grammar structure. Jenny's reading behaviors can be illustrated in two aspects. First, her reading process was hardly hindered or interrupted by reading difficulties which resulted from insufficient language proficiency when she read the articles from the high-profile magazine. Even though she could not recognize all of the vocabulary appeared on the four articles, these unfamiliar words did not cause any critical damage to her reading comprehension. For example, Jenny grasped the main ideas of these four articles pretty well, and she could mostly memorize and recall the most important themes stated in the news stories without making serious comprehension mistakes. Even more, when talking about the articles, Jenny would further reflect on her experience in reading similar stories by referring to specific details. Both of the evidence showed that she had well comprehended each article.

According to the data, Jenny's reading performance process was not affected by those problems resulting from new vocabulary to a great extent because her metacognitive ability contributed to monitor comprehension and supported her utilization of reading strategies. For example, unlike those English learners with lower language proficiency who fail to distinguish the importance of words and tend to consult dictionaries for new vocabulary, Jenny turned her attention to the vocabulary she needed. Once she had understood the key points, she went on reading and left those words unsolved. As for grammatical issues, she had no problem with understanding sentences in these articles. Without limitations of time for reading, she carefully broke those multi-layered sentences into several parts and then labeled and reorganized each part according to grammar rules. In doing so, those difficult sentences were making sense to her through a step-by-step manner in spite of more time required.

Jenny's reading process was also facilitated by a top-down reading style, especially the one proposed by Rumelhart (1977). As Rumelhart's statement that reading is a mechanism supported by the message center that "keeps a running list of hypotheses about the nature of the input string" (p. 589), instead of making efforts to understand every single word in the passage as bottom-up reading models, Jenny made a lot of assumptions and hypotheses based on her knowledge about the specific topic or rhetoric structures of the articles. For example, when reading the article about an Iranian woman who won the Nobel Peace Prize in 2003, she raised questions, immediately upon noticing the woman's nationality, about the reason why the woman got the prize because she assumed that there are human rights or war problems in the country. But, later she rejected her hypothesis after learning more information of this country's revolution from the texts and then modified her assumptions to make connections between the article and her existing knowledge. Another example is also useful to illustrate how Jenny made hypotheses based on the writing structures of the article. When she read the most difficult article about a new treatment of heart disease, she noticed that the author used a lot of transition words such as "however" or "nevertheless" to connect the paragraphs in the article. By paying attention to the writing structure itself, she hypothesized that there would be many contrasts or comparisons between old and new treatments and these patterns would be useful for her reading comprehension. The hypotheses were substantiated along with the sentences, and unsurprisingly, her reading comprehension was facilitated, enabling her to capture the main ideas of the article with fewer struggles through noticing those words and repeating this procedure to process the texts. According to Samuels and Kamil (1998), "by means of separate knowledge sources and a message center which permits these sources to communicate and interact with others, the higher-order stages are able to influence the processing of lower-order stages" (p. 30-31). The higher-order thinking process used by Jenny to obtain an overarching picture of the article allowed her to get through the obstacles she encountered and even be able to figure out the meanings of some unfamiliar words.

Jenny's responses to interview questions and the protocols reported during her reading process demonstrated that grammatical and lexical knowledge did not have a great impact on her reading performance, given that she was confident in her reading ability and did a good job on comprehending the gist of the articles clearly and meaningfully. However, the data revealed that there might be some other factors which can cause variance of the degree of the influence. For instance, purposes of reading were significant factors in Jenny's case. After comparing recall and think-aloud protocols with the content of those articles, discrepancy between the protocol for the medical story and those for the other three articles in terms of amount of the details provided can be found; that is, the protocol for the medical story was much shorter and rougher, only covering the most general ideas whereas the other three protocols offered much more detailed information and development of those stories. Besides, some minor mistakes Jenny made were found when she summarized the articles as the following two examples:

1. The original texts extracted from the article *Great Leap Skyward*:
Along the way, Beijing will pick up military technology and, no doubt some catchy consumer item to match the smoke detectors and cordless vacuum cleaners born of NASA.

Jenny's Interpretation:

After Beijing sends the astronaut to the space, there will be some economic effect along with this program. For example, Beijing will produce some products related to this program such as stamps, postcards, or some souvenirs. The Chinese people will love to buy these products, and Beijing will make some extra money because of this space plan.

2. The original texts extracted from the article *How the Teachers Killed a Dream*:
“The Thompson schools would devastate the critical mass of students who remained in our traditional schools.” ... She was referring to the \$7,100 per pupil that would travel with each student who chose to go to a charter school (although the state offered the Detroit schools \$15 million to compensate for the lost funds).

Jenny’s interpretation:

The new schools will devastate the traditional schools because the students need to spend much more money to travel to other cities.

According to the first interview, Jenny reported that the ways she read research papers for academic purposes and the ways she consumed novels, news stories, and articles from magazines for entertainment were very different. When she read research papers, she tended to look up all new vocabulary in the dictionary to ensure that she got all of the information correctly. Not only did she write down Chinese or English definitions of the new words, but she also tried to memorize those terms. Moreover, she highlighted key sentences with different markers or crayons to differentiate the importance of those ideas. Yet, her reading behaviors were quite different when she read materials for entertainment or news information. She only focused on the most important ideas in those stories and never looked up new terms from dictionaries. What she did was to absorb the information in an efficient way, so she did not pay much attention to the detailed information such as people’s names, year, date or statistical numbers. All of these behaviors were well reflected on the reading process when she was asked to read articles chosen from Time Magazine. She always finished reading those articles in a very short amount of time, and was reluctant to use dictionaries or to read the same paragraph more than twice. Based on the evidence illustrated above, it can be assumed that the mistakes she made about the articles resulted from not paying enough attention to reading these stories, given the fact that the language used in the above extracts might not cause problems to her.

The second factor which would alter the impact of grammatical and lexical knowledge on Jenny’s reading practice was the knowledge related to the subject areas of the articles. For Jenny, those three articles about China’s space program, Nobel Peace Prize laureate and educational issues in Detroit were much easier to read because she had knowledge in those topics or experiences of reading the news elsewhere. In contrast, reading the article *Drano for the Heart* was a totally different scenario. It was obvious that Jenny’s reported protocols of the other three articles contained more detailed and meaningful information. When Jenny was asked to summarize the article about a new treatment of heart disease, she avoided those difficult terms in the protocol but used some substitutive terms such as “new medicine” or “a new kind of treatment.” Moreover, extra effort seemed to be made when she was recalling the story as she took more time, used a plenty of paraphrases, and revised her sentences many times. In the reading process, she slowed the speed of reading, paid more attention to the vocabulary, expressed emotional frustration, and used more bottom-up reading behaviors. In this case, it seemed that Jenny’s reading performance was affected by limited lexical knowledge to some

extent. Yet, Jenny's synopsis of the story was eventually well presented in her protocols except for not being able to answer some detailed questions on the medical terminology. In turn, instead of insufficient vocabulary and grammar knowledge, Jenny's lack of content knowledge and unfamiliarity of subject area of this specific article caused major hindrance to her reading performance.

In summary, for an advanced English learner like Jenny, in the contexts of reading research papers or news articles, knowledge of grammatical structures and vocabulary only caused influence on her speed of reading or ability to retain detailed information. Generally, her reading practice was not limited or impeded by the existing language ability. However, the impact of grammatical and lexical knowledge on L2 reading varied when the reader was reading for different purposes or reading articles with specific topics. In other words, although an advanced reader's language proficiency is strong enough to support her to accomplish most of the reading tasks, these two factors might be the most critical variables in altering relative performance in L2 reading.

Research Question 2

The second research question aimed to find out the reading strategies that an advanced L2 reader used to overcome the reading difficulties and compensate the insufficiency of language ability. The data revealed four reading strategies which Jenny often used to facilitate her reading: reading aloud, highlighting or making marks, looking into pictures, and mental translation. First, Jenny read aloud when she found some sentences were not easy to understand. According to Jenny, she believed that there was a connection between reading and listening. When she read aloud the texts which troubled her, she felt that her comprehension was improved. Silent reading was more useful and efficient way for reading easier articles or under constraints of time which she usually used in most situations. Yet, reading aloud was a useful strategy that smoothed her reading process and improved retention of information.

In addition to reading aloud, one of the most noticeable reading behaviors Jenny had was making a lot of marks such as slashes, circles, underlines, and brackets with her pencil on reading materials along with her eye movements on the pages. There tended to be more marks on the difficult articles than on easier ones. For Jenny, making marks on the paper helped her monitor reading comprehension, and those different marks served as different functions. For example, she used slashes to break down complex sentences into simple pieces, circles for unfamiliar words, underlines to highlight key sentences or ideas, and brackets to draw her attention to an entire paragraph. These techniques were particularly valuable in solving grammatical problems and obtain overall themes of the articles. As she stated, "if I cannot draw anything on the paper, I don't feel like understanding the meaning of these sentences."

Jenny also paid attention to photos and pictures when she struggled with understanding some of the sentences and terminology appeared on the article – *Drano for the Heart*. From her think-aloud protocol, it was found that she referred to the picture of artery back-and-forth whenever she encountered medical terminology in the article. It was difficult for her to understand the words about medicine if she only relied on decoding the vocabulary; however, with the picture as supplement, she had a clearer picture about how these words functioned in the articles and also wove the isolated sentences into a net of information.

The last reading strategy Jenny used when she read the English articles was mental translation. In line with the results of Kern's (1994) study, translating difficult sentences from English to Chinese was a very helpful strategy to improve her reading comprehension. Through

mental translation, she would be able to monitor her reading process, make meanings understandable to her, and memorize the information embedded in the articles. While observing Jenny's reading processes of these four articles, the researcher found that sometimes she talked to herself in Chinese when she noticed that some sentences were confusing or too complicated. By the same token, on her books and research articles for school work, there were many Chinese words or sentences appeared on the margins of the pages. Jenny reported that this use of Chinese language is a must to help her organize her logical thinking about the articles because sometimes thinking in English made her even more confused with the content. Writing down Chinese translation of new words also helped her know how to use the words as well as acquire the meanings of the vocabulary more efficiently. Although she was taught that using her native language would have a negative effect on her English learning progress, she still heavily relied on this strategy especially in the English reading contexts.

These four reading strategies played different roles in facilitating Jenny's reading performance, and her comprehension and fluency of reading could be enhanced with the help of these strategies. Yet, it was interesting that she did not think that any of these reading strategies would bring too much benefit on acquiring or guessing the correct definitions of the new words from the articles. When being asked what methods she would employ to improve her reading ability, she answered that keeping learning new vocabulary was regarded as necessary effort that she needed to make in order to push herself further in reading English.

Conclusion

This case study shows that the advanced L2 reader's reading process was barely constrained by grammatical and lexical difficulties in the context of reading articles from a prestigious news magazine, and that the advanced reader overcame obstacles in reading by using different reading strategies. In this case study, the advanced L2 reader was competent to obtain the information she needed regardless of some limitations of her linguistic knowledge. On one hand, the L2 reader was equipped with sufficient vocabulary and grammar knowledge, so comprehending articles from Time Magazine was not a difficult task. On the other hand, in order to facilitate reading process, a variety of reading strategies were utilized skillfully, and the problem of being not able to recognize certain words did not cause major obstacles. The findings of this study are in line with the studies reviewed previously, suggesting that L2 readers' greater competence in L2 vocabulary and grammar would facilitate their reading process and improve reading comprehension, and that the linguistic proficiency enabled the L2 reader to well utilize a variety of reading strategies when she encountered difficulties (Anderson, 1991). In contrast with those quantitative, test-oriented studies, the case study, through a qualitative research design, allow an advanced L2 reader's reading practice to become more tangible. We would be able to further understand the asset of an L2 advanced reader's metacognitive strategies in reading and how these strategies served to enhance reading performance and fluency. Finally, in the light of the study, the reader's reading behavior and focus of attention might differ depending on how she perceived the reading tasks. Relevant issues are therefore recommended to be addressed in future research.

Limitations of the Study

Methodologically, several research limitations are worth further discussion and consideration. First, the lack of observation on Jenny's reading behaviors when she read academic papers related to her educational background was one of the limitations. Although

Jenny's responses to interview questions and the marks she made on her books and academic reading materials showed that she made much more efforts on reading when she needed to study for the text or to learn information of more importance to her, the contrast and comparison of her reading practice in two different contexts would be much more insightful. The second issue which needs to be addressed is how to define "L2 vocabulary knowledge." Should vocabulary knowledge be defined as the ability of recognizing those words not related to any specific professions such as biochemistry, medication, or engineering? Or vocabulary knowledge should be the inclusive capability of knowing all kinds of vocabulary? In the case study, Jenny's extra effort on reading *Drano for the Heart* was interpreted as a result of insufficient knowledge in medicine. Based on the notion that it is not likely for L2 readers to know all of the professional terminology when they read news stories of unfamiliar areas, what really matters should be that readers are able to grasp the general picture and the most important information. However, in Jenny's case, if the data were analyzed from another perspective, considering that readers' vocabulary knowledge should include the knowledge about medical terminology, then it is legitimate to claim that limited vocabulary ability did have a great negative impact on Jenny's L2 reading even she was an advanced English reader. Although Qian (1999) tried to define vocabulary knowledge in two aspects of vocabulary size and depth, the interpretation and categories of vocabulary knowledge might need further exploration and investigation, and future research would need to take these issues into account. Finally, to answer the questions of this study, qualitative methods provided rich sources of data which enables an advanced L2 reader's reading process to be tangible. However, given the nature of case study which focuses on only one research participant, it is difficult for the researcher to claim that the results from qualitative methods can be applied to other situations or to other L2 readers.

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